

(*Pleuronectes platessa*), are hatched whilst floating on the waves. Ova of these and other fishes have been found floating in different stages of development. There is no doubt of this fact, and in some of the larger rivers of China the spawn of fishes is known to float on the surface, for it is collected at certain places for piscicultural purposes, by means of bunches of grass and soft matting. These, it is known, become the recipients of large numbers of fish eggs, and are easily removed to other waters; which, being barren of fish, are in this mode repopulated. There cannot, we think, be a doubt that various fishes spawn in various places, some at the bottom of the sea, some on the surface; and it is very likely, by this diversity, that the varied species are best preserved. The herring (*Clupea harengus*), and probably all its congeners (but this is not quite certain), spawn on the bottom, and the eggs remain there, adhering in masses to the rocks and stones. The eggs of the salmon, we know, when not washed away during deposition by flooded water, sink, by means of their weight, to the bottom, where the parent fish instinctively covers them up with gravel in order to protect them from their numerous enemies. Most sea-fish, we have a strong impression, emit their spawn in the same manner, whatever future direction it may take in the way of motion. All the fish eggs which we have seen gathered from the surface of the water were almost at maturity; and the late Mr. Robert Buist, of the Tay fisheries, informed the writer that he had seen salmon eggs, as the time approached for the *eclosion* of the fish, rise to the top of the water in the breeding boxes at Stormontfield, but they always sank again before the birth of the fish.

What practical bearing has all this on the economy of our fisheries? will be asked. There is one *point* which Mr. Holdsworth makes in detailing M. Sars' discoveries, and it is, briefly stated, "what becomes of all the complaints against the beam trawl net"? That ponderous instrument, as all of us are aware, has been accused of breaking up the spawning beds and killing the fry; but naturally, if there is truth in the discoveries of M. Sars, and if the spawn float on the waves, that accusation must fall to the ground. That the trawl net "hashes" the fish which it captures, and destroys a large number that it does not capture, is well known, but not any of our modes of fishing are perfect. It is not possible to dictate to the fish as to which are to enter or stay out of the death chamber. Nor, if a hundred hooks be set with bait for the line fishery, can we dictate as to what size of cod-fish or haddocks should take the hook. One thing we can do: we can reject all fish which are of insufficient size or have not had an opportunity of multiplying their kind. Most of the line fish when taken on board are alive, and also a large percentage of fish that are trawled. Those which are too small might be restored to their native element. We are ourselves recommending this plan. So far as we understand Mr. Holdsworth, he only confines himself to an exposition of how we fish: as to how we *should* fish he is silent; in fact, he is satisfied with the deliverance of the Royal Commission of 1863, of which he was the secretary, that our fish supplies have increased and are likely still further to increase. We should not in the least object if the increased supplies kept pace with the augmented machinery of capture.

## JARDINE'S "PSYCHOLOGY OF COGNITION"

*The Elements of the Psychology of Cognition.* By Robert Jardine, B.D., D.Sc., Principal of the General Assembly's College, Calcutta, and Fellow of the University of Calcutta. (Macmillan and Co., 1874.)

MR. JARDINE has seemingly had some personal reason for writing this treatise; for in the preface he asks the critic to bear in mind "that the book has been written with considerable haste, in order to secure its publication within a certain limited time." It would have been wiser to ignore the critic: for this unsympathetic personage is only too certain to meet this innocent confidence with the unfeeling remark that perhaps the interests of science would not have suffered had the author taken a little more time over his work. Had nothing been done before Mr. Jardine began to write "to show the inadequacy and unsatisfactoriness of a prevailing system of psychology," he would have required to make a much more thorough and more direct attack on the teachings of Mr. Mill and Prof. Bain, in order to accomplish "one principal object" that he had in view. Again, we think Mr. Jardine would have better consulted the interests of his readers generally, including the "students," for whom the book was "principally designed," had he made more explicit reference to the writers to whom he is indebted for the weapons he has employed in this attack on "phenomenalism." Another general criticism that must be made is, that there is not a sufficient wealth of concrete illustration, and that, though the writer has "endeavoured to express himself in as clear and simple language as possible," his words are, nevertheless, often dark and difficult enough. What will readers "beginning their philosophical studies" make of such a sentence as this?—"It must be borne in mind that it is in their character as modes of the non-ego that objectified sensations are localised. The localising is, therefore, not so much an act of consciousness as a precept of consciousness and a form of the non-ego."

We do not find it easy to review this book fairly. For one thing, the author has no personality; then, while on the one hand it would be very easy to speak of the excellence of many pieces of exposition, on the other hand nothing could be easier than to select a few passages for unmitigated censure. On the strength, for example, of the following sentence, one might almost question the claim of the writer to rank as a scientific student of the subject on which he has written:—"In the scientific mind of modern times," says Mr. Jardine, "there has arisen, through the influence of a long-continued and exclusive study of phenomena, a predisposition to doubt the occurrence of events which are plainly beyond the sphere of phenomenal laws." The worst of it is that long before we reach this sentence, which occurs near the end of the book, we have come to regard Mr. Jardine as a man of such respectable ability that we have the greatest difficulty in believing that he can really think that anything he has said can carry him a single step towards the goal he now seems anxious to reach. The scientific men of modern times are innocent enough of having their minds "vitiated by the prevailing phenomenalism" represented by Mr. Mill and Prof. Bain. They have indulged in an exclusive

study of phenomena for the very sufficient reason that they can never get at anything else. In justice to the author, however, it must be said that he several times gives pretty distinct evidence that he has never quite grasped the question at issue between our modern realists and idealists. Compare the following sentences with the one just criticised:—"Light, heat, electricity, force, as studied by physicists, are non-phenomenal powers, and the object of science is to ascertain their laws and relations." "Realism, as found in Herbert Spencer, and as supported by recent investigations of science, demands a belief in real objective non-phenomenal forces." Mr. Jardine does not tell us, and we cannot conceive, what recent scientific investigations he could have been thinking of; but that he should suppose that Mr. Spencer's doctrine of the unknowable could be supported by any recent discoveries, or by anything ever to be discovered, shows conclusively that he has still to learn what that doctrine really is.

We agree with Mr. Jardine in rejecting the idealism of Mr. Mill; and we must say that some of Mr. Jardine's criticisms are very happy. Here is an example. Mr. Mill says that the possibilities of sensation that make up a given group "are conceived as standing to the actual sensations in the relation of a cause to its effects." On this Mr. Jardine remarks: "We have, for example, the sensation of a particular figured colour, which is associated with the name orange. Connected with this sensation there are a number of possible sensations of smell, taste, touch, sound, &c. *The possibility of those sensations is the cause of the colour.* What does this mean? Is the possibility of a smell the cause of a colour? Is the possibility of a taste the cause of a colour? Or is the possibility of all the other sensations of the group taken together the cause of colour?" No doubt some of Mr. Mill's disciples may object that Mr. Jardine has misunderstood Mr. Mill; they will, however, find it hard to give any definite meaning to the words of their master without either making him a realist or letting in some such criticism as the above.

But though we cannot always agree with Mr. Mill, we can never think of him without feelings of profound admiration and respect. We have therefore no sympathy with Mr. Jardine when he tells us how easy it is "to show the absurdity" of Mr. Mill's attempt to explain our notion of extension. A more modest self-appreciation in the presence of Mr. Mill would have been becoming; the more so as Mr. Jardine has none of that cleverness of expression which may at times do something to cover the audacity of the critic. Mr. Mill will not fall before the word "absurdity"; and Mr. G. H. Lewes will not be seriously damaged by being loosely classed with "a set of visionary speculators called phrenologists," who, acting upon a "hasty and crude hypothesis," have made a very great blunder.

There only remains to say that Mr. Jardine seems to be himself unacquainted with the psychology of our own day. He may sneer at Mr. Lewes for giving "prominence to the study of physiology as a means of becoming acquainted with mental laws," but if he would entitle himself even to a hearing, he must, as a first condition, make himself master of the knowledge that has been laboriously acquired by the school of investigators to which Mr. Lewes belongs.

DOUGLAS A. SPALDING

### WHITE'S "SELBORNE"

*White's Natural History of Selborne.* Edited by J. E. Harting, F.L.S. Illustrated by Bewick. (London: Bickers and Co., 1875.)

ALTHOUGH we have no evidence that, within the last century, there has been any considerable change in the average standard of human mental power amongst civilised nations, the surroundings of every-day life have so greatly altered, both in their quality and in the rapidity of their occurrence, that the standard of ordinary existence has undergone a corresponding modification. The introduction of steam locomotion, the electric telegraph, and the penny post have developed such a condition of unrest in humanity at large that the unalloyed repose of a continuous rural life is rarely sought for, and as infrequently obtainable. We can hardly conceive it possible that anyone, such as a life-fellow of a college, as was Gilbert White, of Oriel, Oxford, should at the present day settle down in any out-of-the-way part of the country, satisfied with nothing more than an opportunity of observing and recording the surrounding phenomena of nature. More would be expected of him, and he would be continually led to feel that he was but one of the instances of the vegetating influence of an antiquated system, whose advantages were being daily disproved by his individual existence.

The same influences have affected the mental world. Facts have a less intrinsic value than they used to have in the time of Gilbert White, the Addison of natural phenomena. More must now be extracted from them in their mutual relations. They must be manipulated into the web of some inclusive hypothesis, or otherwise they may as well die an unrecorded death, because their independence only helps to block the already but too narrow path which leads towards omniscience. In this period of revulsion against encyclopædic knowledge, a remark by the author of the work before us, when writing of the otter, indicates a tenour of thought which is antiquated, to say the least. "Not supposing that we had any of those beasts in our shallow brooks, I was much pleased to see a male otter brought to me, weighing twenty-one pounds, that had been shot on the bank of our stream below the Priory, where the rivulet divides the parish of Selborne from Harteley Wood." No inference is drawn, no comment made; whence the source of pleasure?

We cannot well conceive a more efficient editor, at the present time, than Mr. Harting. That author's considerable experience and his great love for the study of the ornithic fauna of the British Isles has already made his name well known in connection with the birds which reside amongst us, and those which visit our shores. He also tells us in his preface, as may be equally well inferred from his annotations throughout the work, that he is well acquainted with the neighbourhood of Selborne, which enables him to correct a few of Gilbert White's inaccuracies, and bring to the foreground those slight changes in the fauna and flora of the district which have occurred since the book was originally written. Amongst the latter, special attention is directed to the reintroduction into Wolmer Forest, by Sir Charles Taylor, of black game, "which I (Gilbert White) have heard old people say abounded much before shooting flying became so com-